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Two new genus records for Turkish mycota

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Abstract — The genera *Geopyxis* (*Pyronemataceae*) and *Asterophora* (*Lyophyllaceae*) are recorded from Turkey for the first time, based on collections of *Geopyxis carbonaria* and *Asterophora lycoperdoides.* Short descriptions and photographs of the taxa are provided.

Key words —*Ascomycota, Basidiomycota,* biodiversity, macrofungi

Introduction

Geopyxis carbonaria (*Pyronemataceae*) is an abundant post-fire discomycete in coniferous forests. This fleshy mushroom has a complex life cycle and is mycorrhizal on deep roots of members of the *Pinaceae,* and fruits only when the trees die (Vrålstad et al. 1998). Since it often fruits prolifically after wildfires, it has also been considered to be a possible indicator of imminent morel fruiting (Obst & Brown 2000).

Asterophora lycoperdoides (*Lyophyllaceae*) is a relatively rare basidiomycete that parasitizes other mushrooms in the family *Russulaceae,* especially *Russula nigricans* and *Russula densifolia.* It usually fruits after the host has blackened and begun to decay (Kuo 2006). The fungus generally reproduces asexually by brown powdery chlamydospores formed on the cap surface; its gills, which are often absent or deformed, produce sexual basidiospores only infrequently (Roody 2003).

According to checklists (Sesli & Denchev 2009) and recently published data (Solak et al. 2009, Kaya 2009), neither of the above taxa have previously been recorded from Turkey. The study aims to contribute to the macromycota of Turkey.

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Materials and methods

Specimens were collected from Artvin and Bingöl provinces in 2008. Fruit bodies were photographed and necessary ecological data were recorded in the field. In the laboratory, macroscopic and microscopic measurements were taken following standard mycological techniques and identified with the help of Breitenbach & Kränzlin (1984, 1991), Jordan (1995), and Vrålstad et al. (1998). The specimens are preserved in the fungarium of Yüzüncü Yıl University, Faculty of Art & Science, Department of Biology. Accession numbers contain the following abbreviations: U. = Uzun and D. = Demirel.

Taxonomy

Geopyxis carbonaria (Alb. & Schwein.) Sacc. 1889

Macrocharacters — ascocarp 05–20 mm wide, at first sub-spherical, then cupped (usually goblet shaped), margins white, toothed or fringed, incurved to upturned, hymenial surface uniformly dull orange-brown to reddish brown, smooth; outer surface the same color, smooth or minutely whitish pruinose; context brownish, thin and brittle, taste not significant, but odor very unpleasant when squashed in water; stipe cylindrical, embedded in the substrate (Fig. 1a).

Microcharacters — asci 10–12 × 180–300 µm, 8-spored, cylindrical, hyaline (Fig. 1b); ascospores 11–17 × 7–9 µm, elliptical to slightly fusiform or oblong, smooth, thin-walled, hyaline and without droplets (Fig. 1c); paraphyses cylindrical, septate.

Specimen examined — Bingöl, Genç, coniferous forest, 38°44.723 N, 40°34.632 E, 1053 m, Yusuf Uzun, 13.05.2008, U.B622; 38°44.902 N, 40°34.148 E, 1050 m, Yusuf Uzun, 17.05.2008, U.B675.

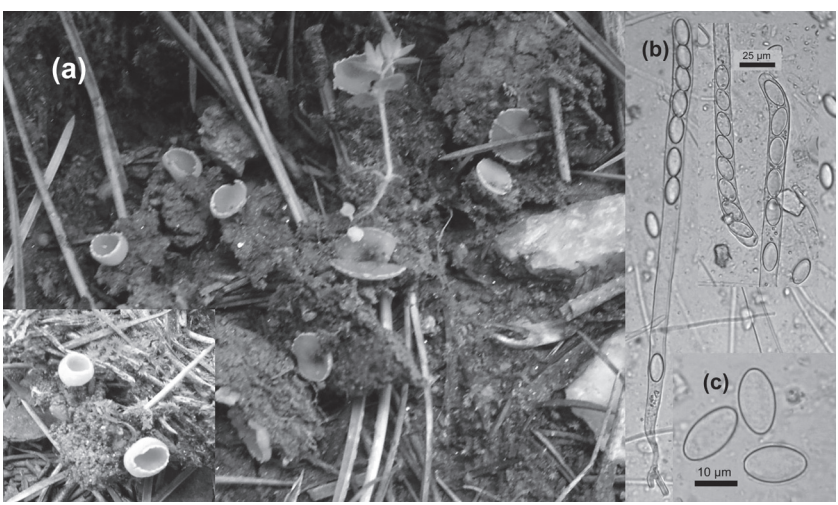

Figure 1. *Geopyxis carbonaria,* a. ascocarps, b. asci, c. ascospores.

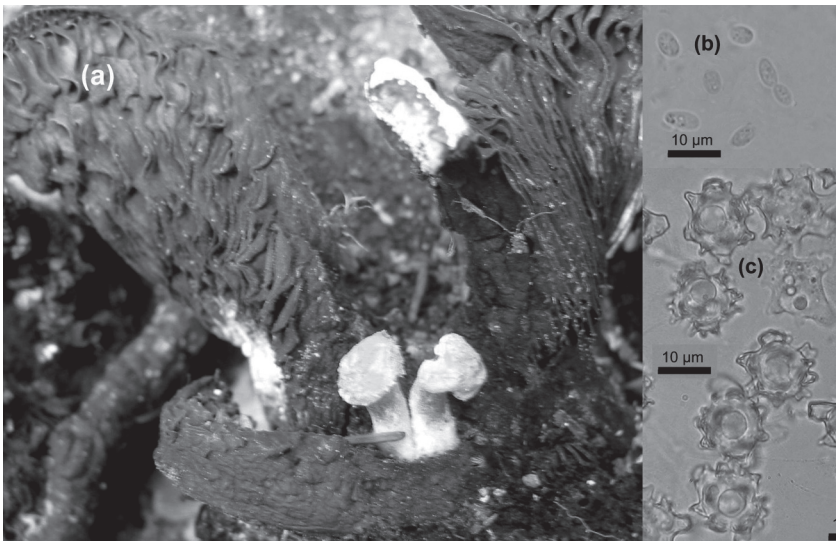

Figure 2. *Asterophora lycoperdoides*, a. basidiocarps, b. basidiospores, c. chlamydospores.

Asterophora lycoperdoides (Bull.) Ditmar 1809

Macrocharacters — pileus 10–25 mm across, hemispherical to convex, whitish and roughened or lumpy when young, brownish and powdery when mature, margin long inrolled; context whitish; odor farinaceous; lamellae whitish to grayish, usually poorly formed and vein-like; stipe 10–25 × 3–7 mm, cylindrical, usually bent, hollow in age, smooth and whitish when young, cottony and brownish when mature (Fig. 2a).

Microcharacters — basidiospores 3.5–6 × 2–4 µm, elliptical, smooth (Fig. 2b), usually difficult to find; chlamydospores 13–19 × 11–18 µm, oval to subglobose, verrucose or spiny (Fig. 2c); clamp connections present.

Specimen examined — Artvin, Şavşat, Karagöl National Park, in coniferous forest, on old *Russula nigricans*, 41°18.612 N, 42°29.214 E, 1676 m, Kenan Demirel, 31.08.2008, D.5070–5071.

Discussion

Recent species lists of Turkish macromycota by Sesli & Denchev (2009), Solak et al. (2009), and Kaya (2009) cite 17 species representing 9 genera (i.e., *Aleuria, Ciliaria, Flavoscypha, Geopora, Humaria, Melastiza, Otidea, Scutellinia, Tarzetta*) in the *Pyronemataceae* and 17 species representing 5 genera (i.e., *Hypsizygus, Lyophyllum, Ossicaulis, Tephrocybe, Calocybe*) in the *Lyophyllaceae* from Turkey.

Perry et al. (2007) observe that 75 genera and 500 species in *Pyronemataceae* have been recorded worldwide, and Bisby et al. (2009) include 9 genera and 73 species in the *Lyophyllaceae*. In view of these numbers and the macrofungal diversity estimates of Mueller et al. (2007) regarding the plant/macrofungus ratios of temperate regions, there is still much to be done to determine the overall distribution of these families in Turkey. Our study significantly contributes two additional species in two previously unrecorded genera to the known Turkish mycobiota.

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